

PCT/US04/39339

## REQUEST

The undersigned requests that the present  
International application be processed  
according to the Patent Cooperation Treaty

For receiving office use only

PCT/US 04/39339  
International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) BU-110Xq999

<b>Box No. I TITLE OF INVENTION</b>	
UNCOOLED CANTILEVER MICROBOLOMETER FOCAL PLANE ARRAY WITH mK TEMPERATURE RESOLUTIONS AND METHOD OF MANUFACTURING MICROCANTILEVER	
<b>Box No. II APPLICANT</b> <input type="checkbox"/> This person is also inventor	
Name and address. (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) TRUSTEES OF BOSTON UNIVERSITY One Sherborn Street Boston, Massachusetts 02215 US	Telephone No. (617) 353-4550 Facsimile No. (617) 353-6141 Teleprinter No. Applicant's registration No. with the Office
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<b>Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTORS</b>	
Name and address. (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) FRAUNHOFER USA, INC. 46025 Port Street Plymouth, Michigan 48170 US	This person is: <input checked="" type="checkbox"/> Applicant only <input type="checkbox"/> Applicant and inventor <input type="checkbox"/> Inventor only (if this check-box is marked, do not fill in below) Applicant's registration No. with the Office
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input checked="" type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet	
<b>Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>	
This person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> Common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) HJORTH, Beverly E. Weingarten, Schurgin, Gagnebin & Lebovici, LLP Ten Post Office Square Boston, Massachusetts 02109 US	Telephone No. 617-542-2290 Facsimile No. 617-451-0313 Teleprinter No. Agent's registration No. with the Office 32,033
Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

## Continuation of Box No. 111 OF FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

LI, Biao  
27 Lanark Road  
Brighton, Massachusetts 02135  
US

This person is:

- ☐ Applicant only  
☒ Applicant and inventor  
☐ Inventor only (if this check-box is marked, do not fill in below)

Applicant's registration No. with the Office

State (that is, country) of nationality: CN

State (that is, country) of residence: US

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ The United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ZHANG, Xin  
62 Bay State Road, #9  
Boston, Massachusetts 02215  
US

This person is:

- ☐ Applicant only  
☒ Applicant and inventor  
☐ Inventor only (if this check-box is marked, do not fill in below)

Applicant's registration No. with the Office

State (that is, country) of nationality: CN

State (that is, country) of residence: US

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ The United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BIFANO, Thomas  
30 Nelson Way  
Mansfield, Massachusetts 02048  
US

This person is:

- ☐ Applicant only  
☒ Applicant and inventor  
☐ Inventor only (if this check-box is marked, do not fill in below)

Applicant's registration No. with the Office

State (that is, country) of nationality: US

State (that is, country) of residence: US

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ The United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

SHARON, Andre  
149 Greenwood Street  
Newton, Massachusetts 02459  
US

This person is:

- ☐ Applicant only  
☒ Applicant and inventor  
☐ Inventor only (if this check-box is marked, do not fill in below)

Applicant's registration No. with the Office

State (that is, country) of nationality: US

State (that is, country) of residence: US

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ The United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet

**Supplemental Box** If the Supplemental Box is not used, this sheet should not be included in the Request.

1. If, in any of the Boxes except Boxes Nos. VIII(i) to (v) for which a special continuation box is provided, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:
  - (i) if more than two persons are to be indicated as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
  - (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
  - (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
  - (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
  - (v) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.
2. If the applicant intends to make an indication of the wish that the international application be treated, in certain designated States, as an application for a patent of addition, certificate of addition, inventor's certificate of addition or utility certificate of addition: in such a case, write the name or two-letter code of each designated State concerned and the indication "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," the number of the parent application or parent patent or other parent grant and the date of grant of the parent patent or other patent grant or the date of filing of the parent application (Rules 4.II(a)(iii) and 49bis.1(a) or (b)).
3. If the applicant intends to make an indication of the wish that the international application be treated, in the United States of America, as a continuation or continuation-in-part of an earlier application: in such a case, write "United States of America" or "US" and the indication "continuation" or "continuation-in-part" and the number and the filing date of the parent application (Rules 4.II(a)(iv) and 49bis.1(d)).

#### Continuation of Box No. IV

SCHURGIN, Stanley M.  
Registration No. 20,979  
GAGNEBIN III, Charles L.  
Registration No. 25,467  
LEBOVICI, Victor B.  
Registration No. 30,864  
HJORTH, Beverly E.  
Registration No. 32,033  
HEINE, Holliday C.  
Registration No. 34,346  
MORIARTY, Gordon R.  
Registration No. 38,973  
GAMACHE, Richard E.  
Registration No. 39,196

All of the Firm of:  
WEINGARTEN, SCHURGIN, GAGNEBIN & LEBOVICI LLP  
Ten Post Office Square  
Boston, Massachusetts 02109  
US

**Box No. V DESIGNATIONS**

The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.

However,

- ☐ DE Germany is not designated for any kind of national protection
- ☐ KR Republic of Korea is not designated for any kind of national protection
- ☐ RU Russian Federation is not designated for any kind of national protection

(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the ceasing of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)

**Box No. VI PRIORITY CLAIM**

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application:* regional Office	international application: receiving Office
Item (1) 21.11.2003 21 November 2003	60/524,074	US		
Item (2)				
Item (3)				

☐ Further priority claims are indicated in the Supplemental Box

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier applications(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

- ☐ all items    ☒ item (1)    ☐ item (2)    ☐ item (3)    ☐ Other, see Supplemental Box

\* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

**Box No. VII INTERNATIONAL SEARCHING AUTHORITY**

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA/US

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)      Number      Country (or regional Office)

**Box No. VIII DECLARATIONS**

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

		Number of declarations
<input type="checkbox"/> Box No. VIII (i)	Declaration as to the identity of the inventor	:
<input checked="" type="checkbox"/> Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	: 1
<input checked="" type="checkbox"/> Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	: 1
<input checked="" type="checkbox"/> Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)	: 1
<input type="checkbox"/> Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:

**Box No. VIII(ii) DECLARATION: ENTITLEMENT TO APPLY FOR AND BE GRANTED A PATENT**

*The declaration must conform to the standardized wording provided for in Section 212; see Notes to Boxes No. VIII, VIII(i) to (v) (in general) and the specific notes to Box No. VIII(i). If this Box is not used, this sheet should not be included in the request.*

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51 bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate:

in relation to this international application,

TRUSTEES OF BOSTON UNIVERSITY and FRAUNHOFER USA, INC., are entitled to apply for and be granted a patent by virtue of the following:

an assignment from

LI, Biao, of 27 Lanark Road, Brighton, Massachusetts 92135, United States of America;

ZHANG, Xin, of 62 Bay State Road, #9, Boston, Massachusetts 02215, United States of America;

BIFANO, Thomas, of 30 Nelson Way, Mansfield, Massachusetts 02048, United States of America; and

SHARON, Andre, of 149 Greenwood Street, Newton, Massachusetts 02459, United States of America

to THE TRUSTEES OF BOSTON UNIVERSITY and FRAUNHOFER USA, INC., dated 27 May 2004.

This declaration is made for the purposes of all designations (except the designation of the United States of America).

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII(ii)".

**Box No. VIII(iii) DECLARATION: ENTITLEMENT TO CLAIM PRIORITY**

*The declaration must conform to the standardized wording provided for in Section 213; see Notes to Boxes No. VIII, VIII(i) to (v) (in general) and the specific notes to Box No. VIII(iii). If this Box is not used, this sheet should not be included in the request.*

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii)):

in relation to this international application,

TRUSTEES OF BOSTON UNIVERSITY and FRAUNHOFER USA, INC., are entitled to claim priority of earlier application

No. 60/524,074

by virtue of the following:

an assignment from

LI, Biao, of 27 Lanark Road, Brighton, Massachusetts 92135, United States of America;

ZHANG, Xin, of 62 Bay State Road, #9, Boston, Massachusetts 02215, United States of America;

BIFANO, Thomas, of 30 Nelson Way, Mansfield, Massachusetts 02048, United States of America; and

SHARON, Andre, of 149 Greenwood Street, Newton, Massachusetts 02459, United States of America

to THE TRUSTEES OF BOSTON UNIVERSITY and FRAUNHOFER USA, INC., dated 27 May 2004.

This declaration is made for the purposes of all designations (except the designation of the United States of America).

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII(iii)".

**Box No. VIII(iv) - DECLARATION OF INVENTORSHIP (only for the purposes of the designation of the United States of America)**  
*The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes No. VIII, VIII(i) to (v) (in general) and the specific Notes to Box No. VIII(iv). If this Box is not used, this sheet should not be included in the request.*

**Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv))  
 for the purposes of the designation of the United States of America:**

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26ter).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior applications: .....

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: Biao Li .....

Residence: 27 Lanark Road, Brighton, Massachusetts 02135, U.S.A. .....

Mailing address: 27 Lanark Road .....

Brighton, Massachusetts 02135, U.S.A. .....

Citizenship: China .....

Inventor's Signature: .....  
 (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: .....  
 (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: Xin Zhang .....

Residence: 62 Bay State Road, #9, Boston, Massachusetts 02215, U.S.A. .....

Mailing address: 62 Bay State Road, #9 .....

Boston, Massachusetts 02215, U.S.A. .....

Citizenship: China .....

Inventor's Signature: .....  
 (if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: .....  
 (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII(iv)".

**Continuation of Box No. VIII(i) to (v). DECLARATION**

*If the space is insufficient in any of Boxes Nos. VIII(i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII(iv), in such case, write "Continuation of box No. VIII..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.*

Continuation of box No. VIII(iv)

Name: Thomas Bifano  
Residence: 30 Nelson Way, Mansfield, Massachusetts 02048, U.S.A.  
Mailing Address: 30 Nelson Way  
Mansfield, Massachusetts 02048, U.S.A.  
Citizenship: United States of America

Inventor's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: Andre Sharon  
Residence: 149 Greenwood Street, Newton, Massachusetts 02459, U.S.A.  
Mailing Address: 149 Greenwood Street  
Newton, Massachusetts 02459, U.S.A.  
Citizenship: United States of America

Inventor's Signature: \_\_\_\_\_ Date: \_\_\_\_\_



**Box No. IX CHECK LIST LANGUAGE OF FILING**

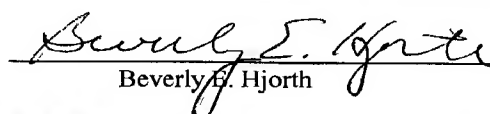
This international application contains:	This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):	Number of items
(a) in paper form, the following number of sheets:		
request (including declaration sheets) : 9	1. <input checked="" type="checkbox"/> fee calculation sheet	: 1
description (excluding sequence listings and/or tables related thereto) : 18	2. <input type="checkbox"/> original separate power of attorney	:
claims : 3	3. <input type="checkbox"/> original general power of attorney	:
abstract : 1	4. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: :	: 1
drawings : 18	5. <input type="checkbox"/> statement explaining lack of signature	:
	6. <input type="checkbox"/> priority documents(s) identified in Box No. VI as item(s):	:
<b>Sub-total number of sheets</b> : 49	7. <input type="checkbox"/> translation of international application into (language):	:
Sequence listings :	8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material	:
Tables related thereto :	9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers (diskette, CD-ROM, DC-R or other))	:
(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)	(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application)	:
<b>Total number of sheets</b> : 49	(ii) <input type="checkbox"/> (only where check-box (b)(i) or (b)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter	:
(b) <input type="checkbox"/> only in computer readable form (Section 801(a)(i))	(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing part mentioned in left column	:
(i) <input type="checkbox"/> sequence listings	10. <input type="checkbox"/> tables in computer readable form related to sequence listings (indicate type and number of carriers)	:
(ii) <input type="checkbox"/> tables related thereto	(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application)	:
(c) <input type="checkbox"/> also in computer readable form (Section 801(a)(ii))	(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater)	:
(i) <input type="checkbox"/> sequence listings	(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column	:
(ii) <input type="checkbox"/> tables related thereto	11. <input type="checkbox"/> other (specify):	:
Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the		
<input type="checkbox"/> sequence listings: _____		
<input type="checkbox"/> tables related thereto: _____		
(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)		

Figure of the drawings which  
Should accompany the abstract:

Language of filing of the  
International application: English

**Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (is such capacity is not obvious from reading the request).

  
Beverly E. Hjorth

For receiving Office use only

1. Date of actual receipt of the purported international application: <b>DT03 Rec'd PCT/PTO 22 NOV 2004</b>	2. Drawings: <input type="checkbox"/> received:  <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but Timely received papers or drawings completing The purported international application:	
4. Date of timely receipt of the required Corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): <b>ISA/</b>	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the  
International Bureau: